

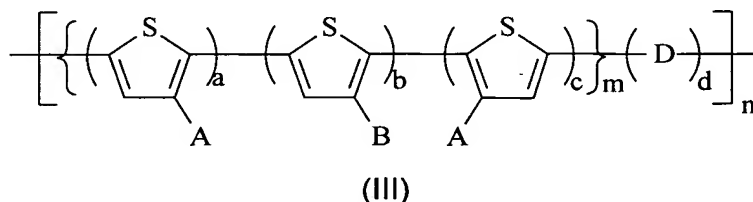
**CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

1-15. (Cancelled).

16. (Previously Presented) A thin film transistor device comprised of a substrate, a gate electrode, a gate dielectric layer, a source electrode and a drain electrode, and in contact with the source/drain electrodes and the gate dielectric layer, a semiconductor layer comprised of a polythiophene represented by Formula (III)



wherein A is a long side chain containing at least about 5 carbon atoms; B is hydrogen or a short side chain containing from about 1 to about 4 carbon atoms; and D is a divalent segment; a and c represent the number of A-substituted thienylenes, wherein a is at least 2; b is the number of B-substituted thienylene units and is from 1 to about 6; d is 1; c and m are independently 1, 2, or 3; and n is the degree of polymerization or the number of the monomer segments in the polythiophene, and wherein the polythiophene has an  $M_n$  between about 4,000 and about 50,000.

17. (Previously Presented) A thin film transistor device in accordance with **claim 6** wherein D is a divalent linkage selected from the group consisting of a saturated moiety of alkylene, -O-R-O-, -S-R-S-, -NH-R-NH-, where R is alkylene or arylene, an unsaturated moiety of an arylene, and heteroaromatics.

18. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is alkyl containing from 6 to about 25 carbon atoms; B is hydrogen or alkyl containing from 1 to about 3 carbon atoms; D is arylene or dioxyarene, each containing from about 6 to about 40 carbon atoms, or alkylene or dioxyalkane, each containing from about 1 to about 20 carbon atoms.

19. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is alkyl containing from about 8 to about 12 carbon atoms, and B is a hydrogen atom.

20. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is alkyl containing from 5 to about 15 carbon atoms; B is a hydrogen atom; D is arylene; a, b, c, and m are independently selected from the numbers 1, 2, and 3; and d = 1.

21. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is alkyl containing from about 8 to about 12 carbon atoms; B is a hydrogen atom; D is arylene; a = c = m = 1; b = 2; and d = 1.

22. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein n is from about 5 to about 5,000.

23. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein the weight average molecular weight ( $M_w$ ) is from about 4,000 to about 500,000 as measured by gel permeation chromatography using polystyrene standards.

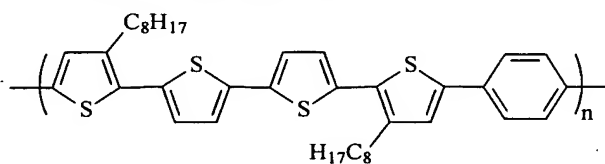
24. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein the number average molecular weight ( $M_n$ ) of (III) is from about 10,000 to about 30,000 and the weight average molecular weight ( $M_w$ ) is from about 15,000 to about 100,000.

25. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, or pentyldecyl.

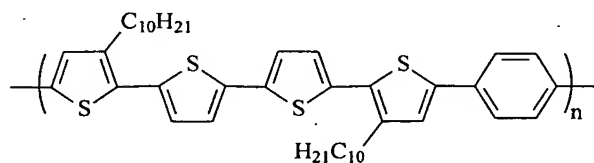
26. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein D is an arylene selected from the group consisting of phenylene, tolylene, xylylene, biphenylene, substituted biphenylene, fluorenylene, phenanthrenylene, dihydrophenanthrenylene, and dibenzofuranediyl, dibenzothiophenediyl, carbazole-diyl.

27. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein D is saturated linkage selected from the group consisting of alkylene, dioxyalkane, dioxyarene, and oligoethylene oxide.

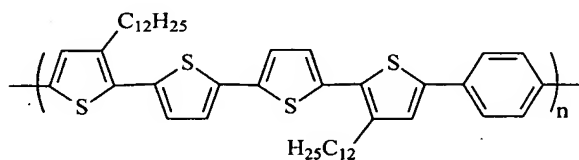
28. (Original) A thin film transistor device in accordance with **claim 16** wherein said polythiophene (III) is selected from (1) through (17) wherein n represents the number of repeating segments



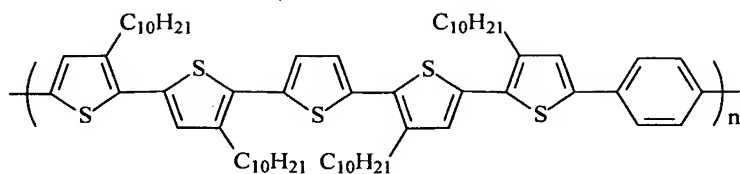
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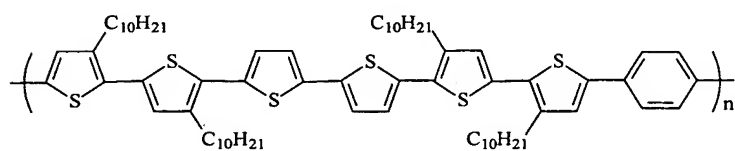
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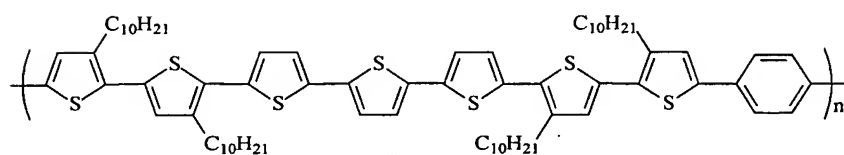
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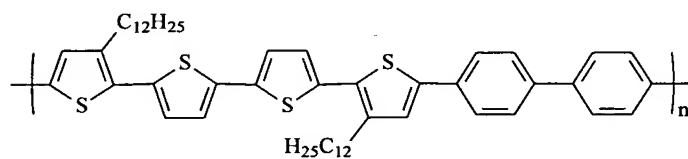
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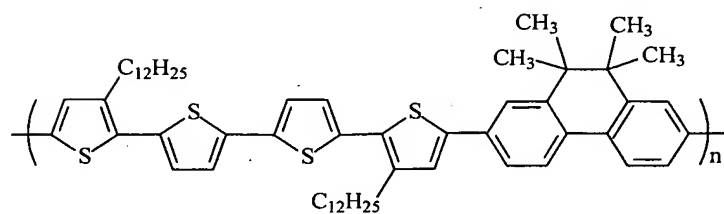
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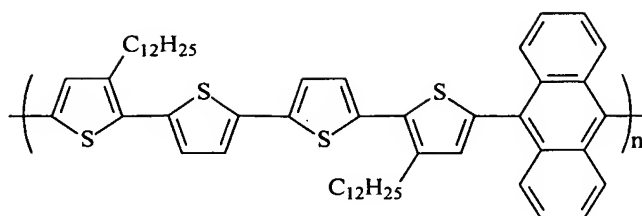
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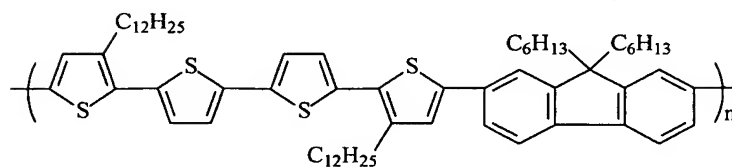
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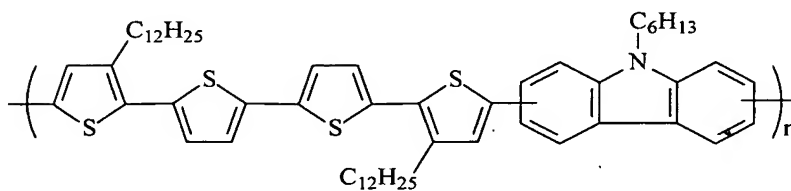
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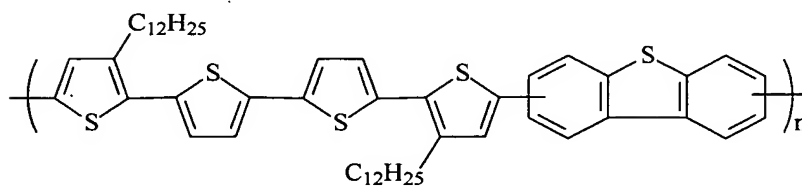
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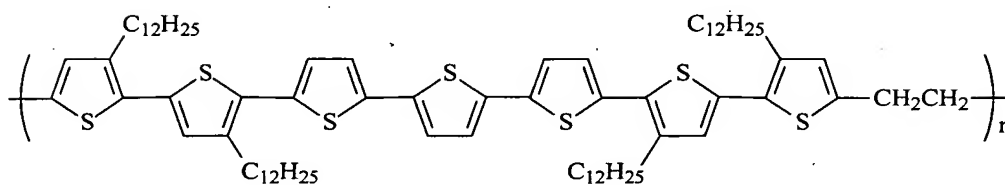
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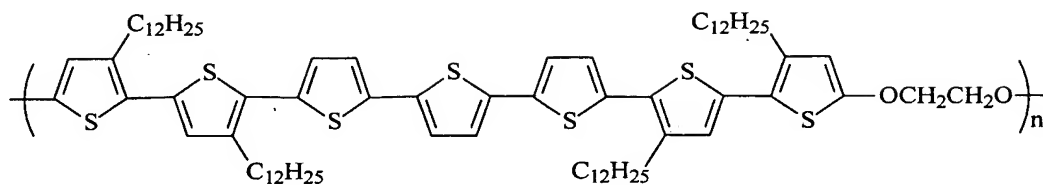
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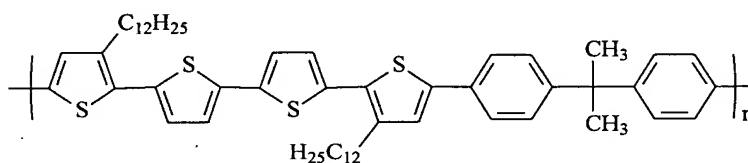
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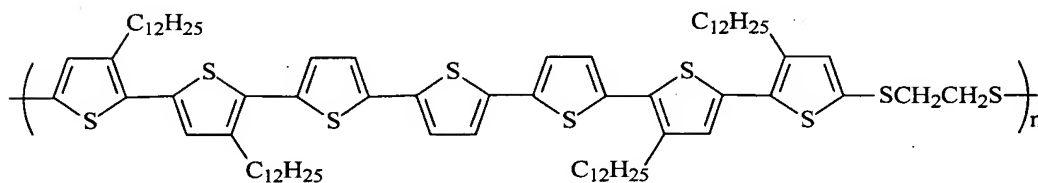
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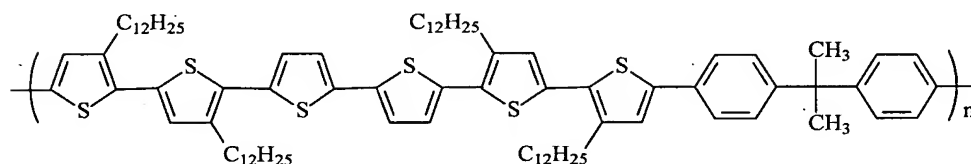
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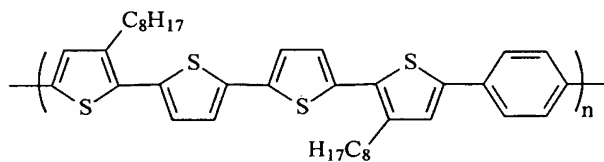


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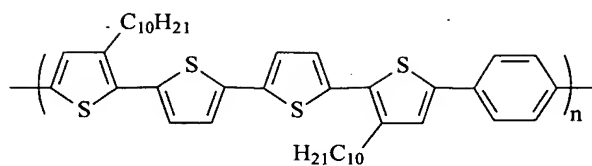


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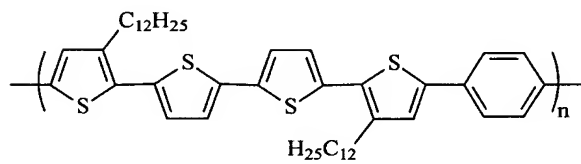
29. (Original) A thin film transistor device in accordance with **claim 16** wherein polythiophene (III) is alternatively wherein n represents the number of segments



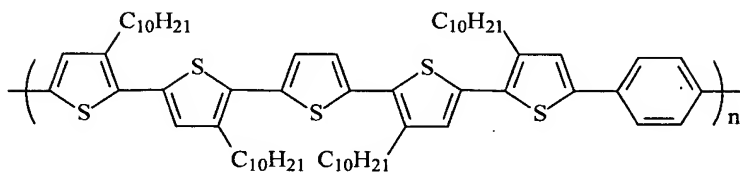
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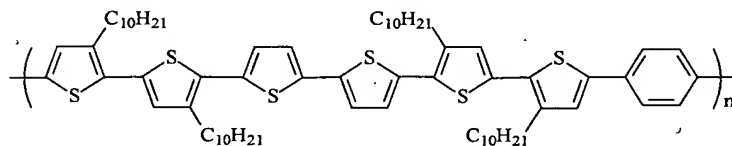
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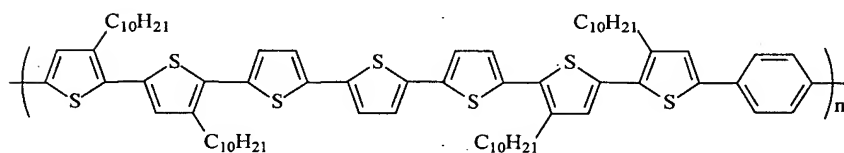
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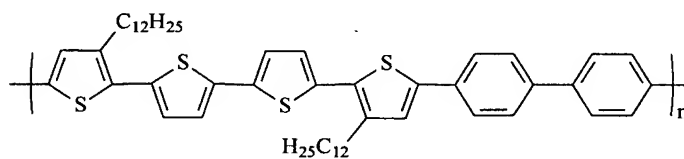
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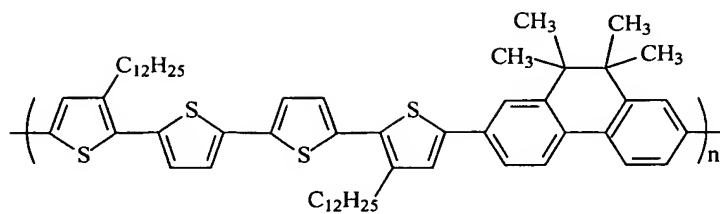
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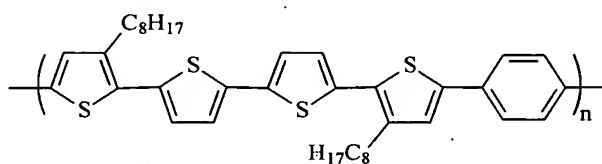


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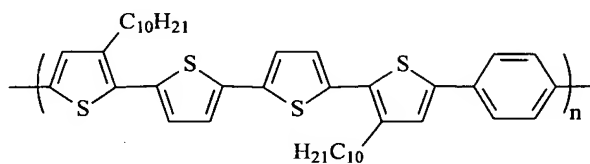


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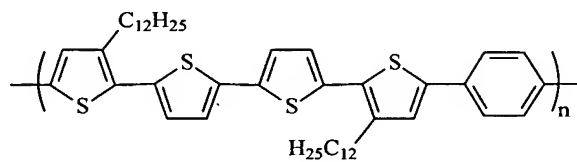
30. (Original) A thin film transistor device in accordance with **claim 16** wherein polythiophene (III) is alternatively wherein n represents the number of segments



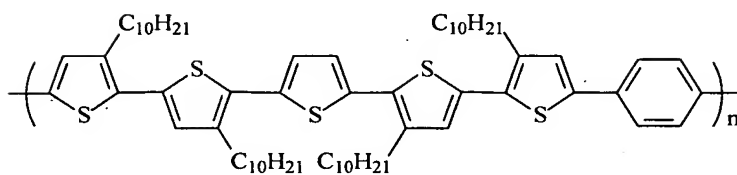
(1)



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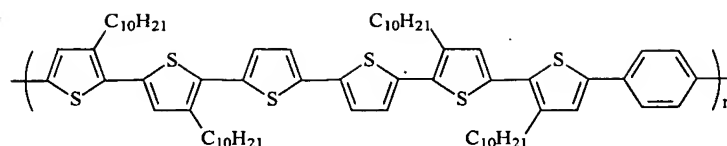


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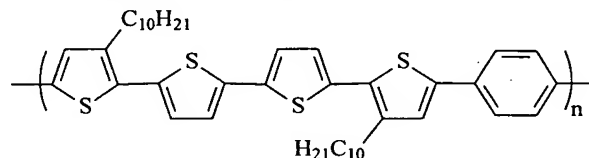
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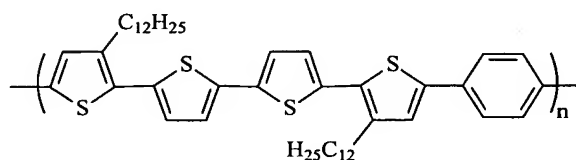


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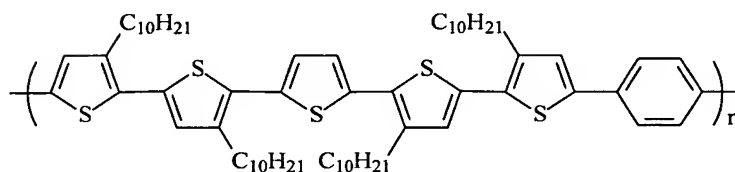
31. (Original) A thin film transistor device in accordance with **claim 16** wherein said polythiophene is alternatively



(2)



(3)



(4)

32. (Original) A thin film transistor device in accordance with **claim 16** wherein said substrate is a plastic sheet of a polyester, a polycarbonate, or a polyimide; said gate, source, and drain electrodes are each independently comprised of gold, nickel, aluminum, platinum, or indium titanium oxide; and said gate dielectric layer is comprised of silicon nitride, silicon oxide, insulating polymers of polyester, polycarbonates, polyacrylate, poly(methacrylate), poly(vinyl phenol), polystyrene, polyimide, or an epoxy resin.

33. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein said substrate is glass or a plastic sheet; said gate, source and drain electrodes are each independently comprised of gold or a metal dispersion in a binder; said gate dielectric layer is comprised of an organic polymer of polyester, polycarbonate, polyacrylate, poly(methacrylate), poly(vinyl phenol), polystyrene, polyimide, or an epoxy resin, or an inorganic-organic composite of nanosized metal oxide particles dispersed in a polymer of a polyester, a polyimide, or an epoxy resin.

34. (Original) A thin film transistor device in accordance with **claim 16** wherein the thickness of the substrate is from about 10 micrometers to about 10 millimeters; the thickness of the gate dielectric layer is from about 10 nanometers to about 1 micrometer; the thickness of the polythiophene semiconductor layer is from about 10 nanometers to about 1 micrometer; the thickness of the gate electrode layer is from about 10 nanometers to about 10 micrometers; and the thickness of the source or drain electrode is from about 40 nanometers to about 1 micrometer.

35. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is alkoxyalkyl, a polyether chain, perhaloalkyl, a polysiloxy chain, and hydrogen, halogen, alkyl, or alkoxy.

36. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein B is hydrogen, halogen, alkyl, or alkoxy.

37. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is methoxybutyl, methoxyhexyl, methoxyheptyl, polyethylene oxide, perfluoroalkyl, trialkylsiloxyalkyl, and B is a halide, methoxy, ethoxy, propoxy, or butoxy.